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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,586	09/23/2003	John S. Hsu	920976.00005	2411

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EXAMINER
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TAMAI, KARL I

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/668,586

Applicant(s)

HSU, JOHN S.

Examiner

Tamai I.E. Karl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-19 is/are rejected.
- 7) ☒ Claim(s) 8,20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 5, 9, 11-15, 17, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenberg (US 3411027). Rosenberg teaches a machine (motor or generator) with a radial air gap stator and rotor, where the rotor has pole pairs 49, 51 of opposite polarity and axial extension 50, 52 extending towards secondary air gaps which include axial and radial air gaps. Rosenberg teaches DC secondary excitation coils 58, 59, where the flux in the air gap is increased or decreased based upon the direction of the current through the coil. It is inherent the permanent magnets 54 on the rotor contains the excitation flux entering the pole pieces 49 or 51 to the radial air gap and inhibit flux leakage from the pole portions due to the close proximity of the north-north or south-south pole faces which are mounted on the non-magnetic shaft 53, to increase the flux in the radial air gap of Figure 5. Rosenberg shows the rotor being cylindrical with magnets 27 in grooves with pole pieces 26 to form poles of alternating polarity separated by PM material, and an axial projection 24 extending towards the axial/radial airgaps between 39/40. The apparatus is inherently an AC synchronous generator when the shaft is driven rotated by an external power source.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 5, 7, 9, 11-15, 17, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Koharagi et al. (Koharagi)(US 20020047434). Rosenberg teaches a machine (motor or generator) with a radial air gap stator and rotor, where the rotor has pole pairs 49, 51 of opposite polarity and axial extension 50, 52 extending towards secondary air gaps which include axial and radial air gaps. Rosenberg teaches DC secondary excitation coils 58, 59, where the flux in the air gap is increased or decreased based upon the direction of the current through the coil. It is inherent the permanent magnets 54 on the rotor contains the excitation flux entering the pole pieces 49 or 51 to the radial air gap and inhibit flux leakage from the pole portions due to the close proximity of the north- north or south-south pole faces which are mounted on the non-magnetic shaft 53, to increase the flux in the radial air gap of Figure 5. Rosenberg shows the rotor being cylindrical with magnets 27 in grooves with pole pieces 26 to form poles of alternating polarity separated by PM material, and an axial projection 24 extending towards the axial/radial airgaps between 39/40. The apparatus is inherently an AC synchronous generator when the shaft is driven rotated by an external power source. Rosenberg teaches every aspect of the

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invention except the permanent magnet material between the some of the poles and the rotor core. Kohargai teaches rotor having permanent magnet material between the poles and the rotor core to control flux leakage. Kohargai teaches the equivalence of the rotor poles formed with a gap between the magnets (figure 2) and with a solid permanent magnet pole (figures 4). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg with permanent magnet material between the rotor poles and the core to control flux leakage, and because it is within the ordinary skill in the art to choose between know equivalents.

In regards to amended claim 7, Rosenberg shows a pole extension from pole 25 under ring 28 with a pole ring 24 integrally attached to the extension inherently forming a poles pieces corresponding to the magnetic pole 25.

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Koharagi et al. (Koharagi)(US 20020047434), in further view of Gay et al. (Gay)(US 2002/0117907). Rosenberg and Koharagi teach the excitation core is magnetic material. Rosenberg teaches every aspect of the invention except the material of the excitation core being iron, steel, iron alloy, or compressed ferromagnetic power. Gay teaches compressed iron particles core because they have reduced eddy current losses. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Koharagi with the magnetic material of the cores being compressed iron particles to reduce eddy current losses.

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6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Koharagi et al. (Koharagi)(US 20020047434), in further view of Noda et al. (Noda)(JP 2000-278899). Rosenberg and Kohargai teach every aspect of the invention except shallow surface slits on the circumference and along the axial direction to reduce harmonic slot losses. Noda teaches shallow slits on the surface of the rotor to reduce harmonics losses. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Koharagi with the shallow surface slits to reduce noise as taught by Noda.

7. Claims 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Koharagi et al. (Koharagi)(US 20020047434), in further view of Roa et al. (Roa)(US 6097124). Rosenberg and Koharagi teach every aspect of the invention except the machine being a brushless DC machine. Roa teaches a brushless, permanent magnet machine with a field adjusting coil 112 can be operated as an DC or AC, motor or generator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Kohoaragi with the machine operating as a DC machine because Roa teaches that the PM machines can be operated with or produce either AC or DC current, and because the machine can be operated from a battery or an AC outlet.

***Allowable Subject Matter***

8. Claims 8, 20, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

9. Applicant's arguments filed 10/11/2005 have been fully considered but they are not persuasive. Applicant's argument regarding flux traveling through the permanent magnets in Rosenberg is not persuasive because the magnetic flux from the permanent magnet will inherently flow from the south to the north poles and back to the south pole. Applicant's argument regarding the flux leakage from the axial ends of the rotor or the magnet extending axially beyond the stator is not persuasive because the limitation is not claimed. Applicant's argument regarding the flux leaking between the poles is not persuasive because it is known to form the rotor magnets as separate magnets (fig. 2) or a single magnet (fig. 4).


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai at telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. The facsimile number for the Group is (571) 273 - 8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl I Tamai  
PRIMARY PATENT EXAMINER  
November 28, 2005

  
KARL TAMAI  
PRIMARY EXAMINER